double-row technique. The purpose of this retrospective study is to describe this technique, present specific diagnostic pathways and examine the possible risk factors that could affect the final outcome of this surgical treatment method.

Methods: Between 2003 and 2010, 73 patients were operated for gluteus medius and minimus tears with the use of suture anchors and a double-row technique. Pre-and postoperatively, the clinical assessment were performed using the Visual Analogue Scale for pain, Lequesne Index (for Severity for Osteoarthritis of the Hip) and Harris Hip Score. The clinical examination included the resisted external derotation test, 30 s single-leg stance test and resisted abduction test. Pain at high pace steps and the Verbal Scale for self-assessment of handicap were also estimated. The radiological evaluation was done by anteroposterior, lateral hip radiographs and Magnetic Resonance Imaging of the pelvis and the involved hip. Age, bone mass index (BMI), muscle atrophy and fatty degeneration were examined as possible risk factors in the long-term treatment outcome.

Quantitative data were recorded and statistically analyzed with the use of Student *t* test for unpaired and paired samples. Qualitative data were analyzed with the use of Pearson Chi-square and Fisher's exact tests. Significance levels were set at $P < 0.05$ with confidence intervals at 95%. All tests were calculated using the SPSS Inc. Data Access Pack for Windows, version 17.0.1.

Results: Six patients had been lost at the final follow-up. The outcome for 67 patients (70 hips, 37 left and 33 right) was reviewed. The mean duration of follow-up was 4.6 years (range 1–8). Resisted external derotation, resisted abduction and 30 s single-leg stance tests showed high sensitivity and specificity in the diagnosis of gluteus medius tears. Trendelenburg sign seems to be not as reliable for the diagnosis. The age, BMI and muscle fatty degeneration seems to be not risk factors in the treatment outcome. In contrast, muscular atrophy had a negative impact on the therapeutic effect and possibly constitutes a risk factor.

Conclusions: The use of double-row fixation technique gave entirely satisfactory long-term results. The proposed specific diagnostic tools provide an early and accurate diagnosis of gluteus medius and minimus tears. Muscular atrophy should be carefully considered in the preoperative decision for surgery.

FP45-1224

A numerical study to analyze the post-cam force in primary and revision TKAs during several daily activities

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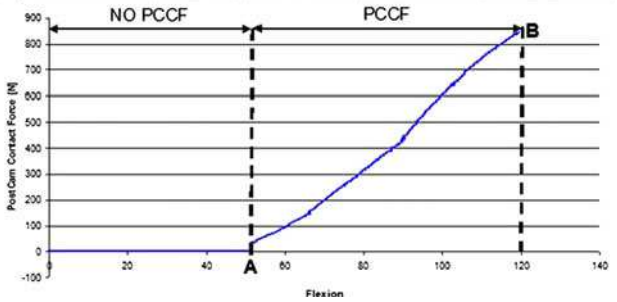
Objectives: The analysis about post-cam contact mechanics, both for primary and for revision Total Knee Arthroplasty (TKA) is very important to understand the relation between post-cam mechanism design, its functioning and the overall TKA function, but not much data is available in literature currently.

In this paper, a validated numerical model was used to analyze the Post-Cam Contact Force (PCCF) in primary and revision versions of two fixed bearing Posterior Stabilized (PS) TKAs. Although each prosthesis type is represented by a specific design, the purpose of this study is not to compare the PCCF of those specific TKAs, but rather to extract and to analyze the maximum PCCF during both normal and high-flexion weight bearing daily activities.

Methods: On a validated, dynamic, musculoskeletal model, based on CT images of a cadaver leg, two primary PS TKAs (Genesis II and Legion, Smith&Nephew, Memphis, TN), with conventional polyethylene insert, and their respective revision types, with condylar constrained polyethylene inserts, were virtually implanted as suggested by the manufacturer. In all cases also the patella was resurfaced.

	GenesisII	GenesisREV	Legion	LegionREV
Walking	287	287	293	311
Stair Descent	289	289	302	316
Stair Ascent	387	423	409	409
Squat	845	902	841	874



In a next step the model was positioned in a virtual knee kinematics rig and the following motor tasks were analyzed: walking (0° to 65° flexion), stair descent (0° to 68° flexion), stair ascent (0° to 93° flexion) and squat (0° to 120° flexion). The respective flexion–extension ranges were based on in vitro cadaver tests and motion capture data. For each model and movement, PCCFs were calculated as a function of flexion angle.

Results: Starting at the flexion angle corresponding with the initial contact (Fig. 1, point A), all designs showed, for all motions, a gradual increase in PCCF with increasing knee flexion. The maximum contact force corresponds with the maximum flexion for all the motor tasks (Fig. 1, point B). Although revision designs consistently show a slightly higher PCCF (3–5%) when compared to their corresponding primary design, overall differences between the analyzed TKA designs are small. All the maximum PCCF are reported in Fig. 1.

Conclusions: The aim of our work was to analyse maximum PCCF for several clinically relevant activities in both primary and revision PS TKA.

Revision designs consistently showed slightly higher PCCF compared to the corresponding primary design. For none of the motor tasks clinically relevant differences were found between the analyzed TKA designs. For all motor tasks, a gradual increase in PCCF was found for increasing knee flexion angles while high-flexion motor tasks showed increased maximum PCCF.

These results are in agreement with data shown in literature and outcomes from experimental tests.

FP45-178

Neuromuscular performance 2–8 years after ACL reconstruction: bone-patellar tendon-bone and semitendinosus/gracilis versus healthy controls

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Objectives: Anterior cruciate ligament (ACL) reconstruction is a world-wide accepted treatment for ACL deficiency in athletes. In the past 20 years there is no extensive research concerning long-term follow-up of neuromuscular performance after ACL reconstruction. Measurements are limited to concentric strength and a single leg hop for distance. Moreover, there are no data available concerning men and women separately.

The purpose of this study is to describe the neuromuscular differences between BPTB and STG, men and women compared with healthy controls.

Methods: A retrospective study was performed. 97 subjects were included and divided into 4 groups: men with BPTB-reconstruction ($n = 24$, mean FU 5.3 years), men with STG reconstruction ($n = 27$,